

# IMPROVED CLAMSHELL APPARATUS FOR ELECTROCHEMICALLY TREATING WAFERS

## ABSTRACT OF THE DISCLOSURE

5           An apparatus for engaging a work piece during plating facilitates electrolyte flow  
during a plating operation. The apparatus helps to control the plating solution fluid  
dynamics and electric field shape to keep the wafer's local plating environment uniform and  
bubble free. The apparatus holding the work piece in a manner that facilitates electrolyte  
circulation patterns in which the electrolyte flows from the center of the work piece plating  
10 surface, outward toward the edge of the edge of the work piece. The apparatus holds the  
work piece near the work piece edges and provides a flow path for electrolyte to flow  
outward away from the edges of the work piece plating surface. That flow path has a  
"snorkel" shape in which the outlet is higher than the inlet. In addition, the flow path may  
have a slot shape that spans much or all of the circumference of holding apparatus. It may  
15 be made from a material that resists deformation and corrosion such as certain ceramics.